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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,363	11/19/2003	Toshihiro Koyama	0020-5200P	3773
2292 7590 06/27/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER RUTHKOSKY, MARK	
			ART UNIT 1745	PAPER NUMBER
			NOTIFICATION DATE 06/27/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

## Office Action Summary

**Application No.**

10/715,363

**Applicant(s)**

KOYAMA ET AL.

**Examiner**

Mark Ruthkosky

**Art Unit**

1745

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-3, 8 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 states that the negative electrode includes “at least 10% by weight of said carbon clack based on the total weight of carbon black.” This relative amount doesn’t make sense. If the amount of carbon black is based on the total weight of carbon black, the amount would be 1 or 100%. Applicant must change the percentage of carbon black as based on the weight of the negative electrode or the weight of the negative electrode active material, etc. This ratio, as claimed, is indefinite.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kizu et al. (US 2003/0165739) in view of Takami et al. (US 5,753,387.)

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The instant claims are to a negative electrode for a non-aqueous secondary cell comprising graphite, carbon black and an aqueous binder, wherein said carbon black comprises particles having a aspect ratio of 1.0 to 5.0 and a largest particle size of 10  $\mu\text{m}$  or less.

Kizu et al. (US 2003/0165739) teaches a negative electrode for a non-aqueous secondary cell comprising graphite, carbon black and a binder (p. 128-141.) Carbon black is used as a conductive material. The conductive material is preferably less than 1  $\mu\text{m}$  (p. 60-71) and 5  $\mu\text{m}$  (p. 141.) The amount of conductive material is preferably 22-8%. Graphite is taught as the active material. The lattice spacing is preferably 0.3355-0.3380 (p. 132.) The specific surface area is preferably 1.5-3  $\text{m}^2/\text{g}$  (col. 154.) The negative electrode material comprises particles having an aspect ratio of 1.0 to 5.0 and a largest particle size of 10  $\mu\text{m}$  or less. The preferred particle size is 5-10 microns (p. 137 and 141.) Binders are noted (128.) The reference teaches the battery in an electronic device (col. 1.) The reference does not teach the electrode to include an aqueous binder.

Takami et al. teaches a lithium secondary battery comprising graphite, an amorphous carbon and a binder (col. 4, line 61 to col. 6, line 15; and cols. 7-9, line 5.) Carbon black is an amorphous carbon material. The lattice spacing is preferably not more than 0.340 and the density is 1.8  $\text{g}/\text{cm}^3$  (col. 8, line 22.) The specific surface area is preferably 0.1-5  $\text{m}^2/\text{g}$  (col. 7, line 1-10.) The negative electrode material comprises particles having an aspect ratio of 2.0 to 10.0. The preferred particle size is 5-10 microns (p. 137 and 141.) CMC and SBR binders are noted. The reference teaches mixing and pressing the electrode materials (col. 17, lines 50-55.) The reference teaches the battery in an electronic device (col. 1.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the binders taught in

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Takami et al. in the battery of Kizu et al. (US 2003/0165739) in order to bind the electrode materials in the form of an electrode. The reference shows that these materials effectively bind the electrode materials in a lithium battery.

The references are silent to the amount of carbon black in the electrode active material. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the amount of conductive material relative to the active material in order to have the desired conduction of electrons to/from the electrode. The prior art clearly shows that graphite intercalates lithium ions in the battery while carbon black conducts electrons. Thus, the skilled artisan would adjust the relative amounts of material to achieve the desired results.

### ***Response to Arguments***

Applicant's arguments filed 4/17/2007 have been fully considered but they are not persuasive. The claims are rejected under 35 U.S.C. 103(a) as being obvious over the teachings of Kizu et al. (US 2003/0165739) and Takami et al. (US 5,753,387.)

Applicant argues that the paragraphs cited in Kizu relate to the positive electrode and not the negative electrode and further notes that that the negative electrodes of the examples include no conductive aid. This argument is not persuasive. Kizu teaches the negative electrode active material coating layer may contain a conductive material as necessary. Natural graphite, artificial graphite, carbon black and the like are noted that have an average particle size of not more than 5  $\mu\text{m}$ . These same materials are noted as conductive carbon material in the positive electrodes, which describes the materials in further detail. The reference teaches that these conductive materials have desired characteristics, as noted. If this is not considered a direct

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teaching for negative electrodes, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use these carbon conductive materials as noted in the negative electrode with these desired characteristics because they have good conductive characteristics in an electrode that intercalates and deintercalates lithium ions.

Applicant further argues that the reference does not teach carbon black particles with a largest particle size of 10  $\mu\text{m}$  or less. In paragraph 141, the reference teaches that the conductive material has an average particle size of not more than 5  $\mu\text{m}$ . This teaching shows that the desired particle size is of a conductive carbon filler is less than 5  $\mu\text{m}$ . If this is not considered a direct teaching for negative electrodes with a largest particle size of 10  $\mu\text{m}$  or less, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use carbon conductive materials less than 5  $\mu\text{m}$  as noted in the negative electrode because particles having a greater size provides poor conductive action (p. 60.) The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Examiner Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky  
Primary Patent Examiner  
Art Unit 1745

*Mark Ruthkosky*  
6/21/07